

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Cancel claims 1-4.

Claim 5 (currently amended). ~~The method of claim 1, wherein the substrate is~~ A method of depositing a ferroelectric thin film comprising:
preparing a silicon substrate by, and preparing the silicon
~~substrate comprises dipping the silicon substrate in buffered HF;~~
depositing an indium oxide film on the substrate; and
depositing a ferroelectric material on the indium oxide thin film
using MOCVD.

Claim 6 (currently amended). ~~The method of claim 1, wherein~~ A
method of depositing a ferroelectric thin film comprising:
~~preparing the a substrate comprises;~~
forming a high-k layer overlying the substrate by depositing a
high-k material selected from the group consisting of hafnium oxide,
zirconium oxide, aluminum oxide, and lanthanum oxide;
depositing an indium oxide film on the substrate; and
depositing a ferroelectric material on the indium oxide thin film
using MOCVD.

Claim 7 (currently amended). The method of claim-~~15~~, wherein depositing an indium oxide film comprises placing the silicon substrate in a DC sputtering chamber with an indium target; providing a chamber pressure of between 1 torr and 10 torr at a deposition temperature of between about 20 °C and 300 °C; establishing a substrate temperature of between about 20 °C and about 300 °C; and sputtering the indium target using a DC sputtering power of between about 100 watts and about 300 watts with a backward power of less than 5% at an oxygen partial pressure of between 0 and about 60%.

Claim 8 (original). The method of claim 6, further comprising annealing the indium oxide film at a temperature between about 400 °C and about 800 °C for between about 5 minutes and about 60 minutes in an oxygen atmosphere.

Claim 9 (currently amended). The method of claim-~~15~~, wherein depositing a ferroelectric material comprises preparing a liquid PGO precursor and injecting the PGO precursor into a vaporizer attached to an MOCVD chamber containing the substrate to form a precursor gas and depositing PGO overlying the indium oxide thin film.

Claim 10 (currently amended). The method of claim 9, wherein preparing the liquid PGO precursor comprises dissolving $\text{Pb}(\text{thd})_2$ and $\text{Ge}(\text{ETO})_4$ at a molar ratio of between approximately 5:3 and 5.5:3 in a mixed solvent of ~~butyl~~butyl ether, or tetrahydrofuran, isopropanol and tetraglymer in a molar ratio of between approximately 6-9:1-3:1-2 to produce a precursor solution with a concentration of between about 0.05 M/L of PGO and 0.5 M/L of PGO.

Claim 11 (original). The method of claim 10, wherein injecting the PGO precursor into the vaporizer comprises injecting the PGO precursor through a feed line maintained at between about 185 °C and 245 °C at a rate of between about 0.05 and 0.5 ml/min while maintaining the vaporizer at a temperature between about 180 °C and 240 °C.

Claim 12 (original). The method of claim 11, further comprising annealing the ferroelectric thin film at a temperature between about 520 °C and 560 °C for between about 30 minutes and 60 minutes.

Cancel claims 13-19.